

# Project Overview

## Sullivan County, NH Unity Complex

### Biomass District Energy Project



Wood Education and Resource Center

# Why utilize biomass at Sullivan County's Unity Complex?

## □ **Social and Environmental Benefits**

- Reduce reliance on foreign fossil fuel (125,000 gal diesel fuel/yr)
- Net reduction of carbon emissions (1,200 tonnes/yr)
- Markets for low-use wood, efficient use of wood resource
- Educational and economic development opportunities

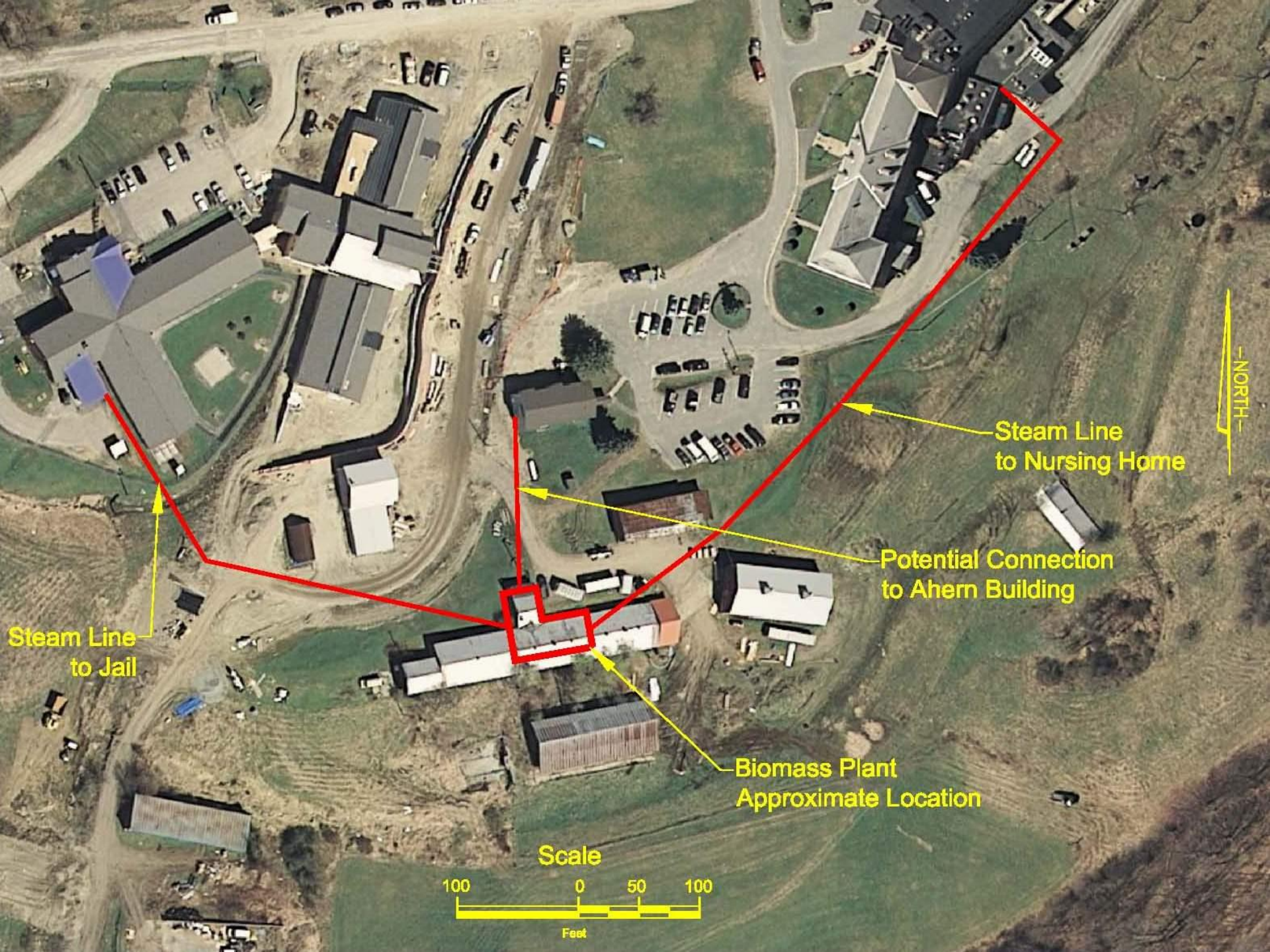
## □ **Economic Benefits**

- Energy dollars stay local (\$80,000/yr)
- Energy savings to owner (\$290,000/yr)
  - \$55,000 positive cash flow in first year of operations
  - Hedge against fluctuations in fossil fuel markets



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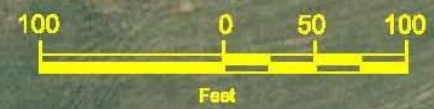
— NORTH —

Steam Line  
to Nursing Home

Potential Connection  
to Ahern Building

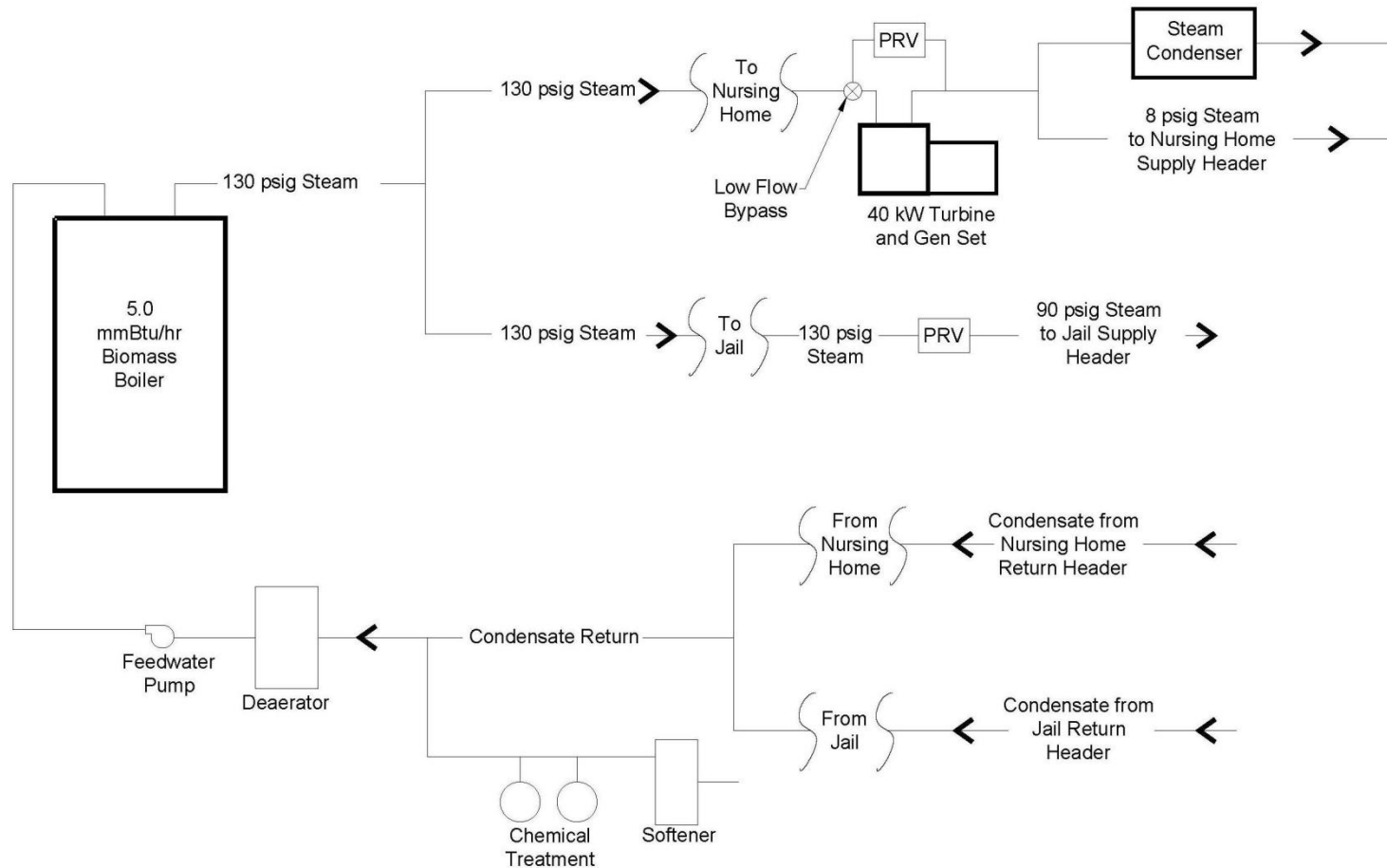
Biomass Plant  
Approximate Location

Scale



Steam Line  
to Jail

# Process Schematic





# Emission Comparison

## Boiler Emission Factor Comparison (Lbs/mmBtu)

Boilers	CO <sub>2</sub>	PM	NO <sub>x</sub>	SO <sub>x</sub>	CO
Existing Fuel Oil Boilers	159	0.0143	0.1429	0.1882	0.0357
Proposed Biomass Boiler	Net 0	0.1700	0.100 - 0.200	0.0020	0.08 - 0.113

Note: 1- Emission factors and ranges from are from EPA AP 42 for oil boilers and actual emission tests for wood chip boilers.  
2- Biomass is considered carbon neutral and generates carbon credits that can potentially be sold on voluntary markets.

## Avoided Annual Emissions from Electricity Generation

Annual Generation (MWh)	Emission Avoidance Rate (Tons CO <sub>2</sub> e/MWh)	Annual CO <sub>2</sub> e Avoided (Tons)
137.3	0.744	102.2

Note: From [www.eia.gov](http://www.eia.gov) for power plants in Region 1 (New Hampshire)



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# Similar Biomass Projects at Hospitals

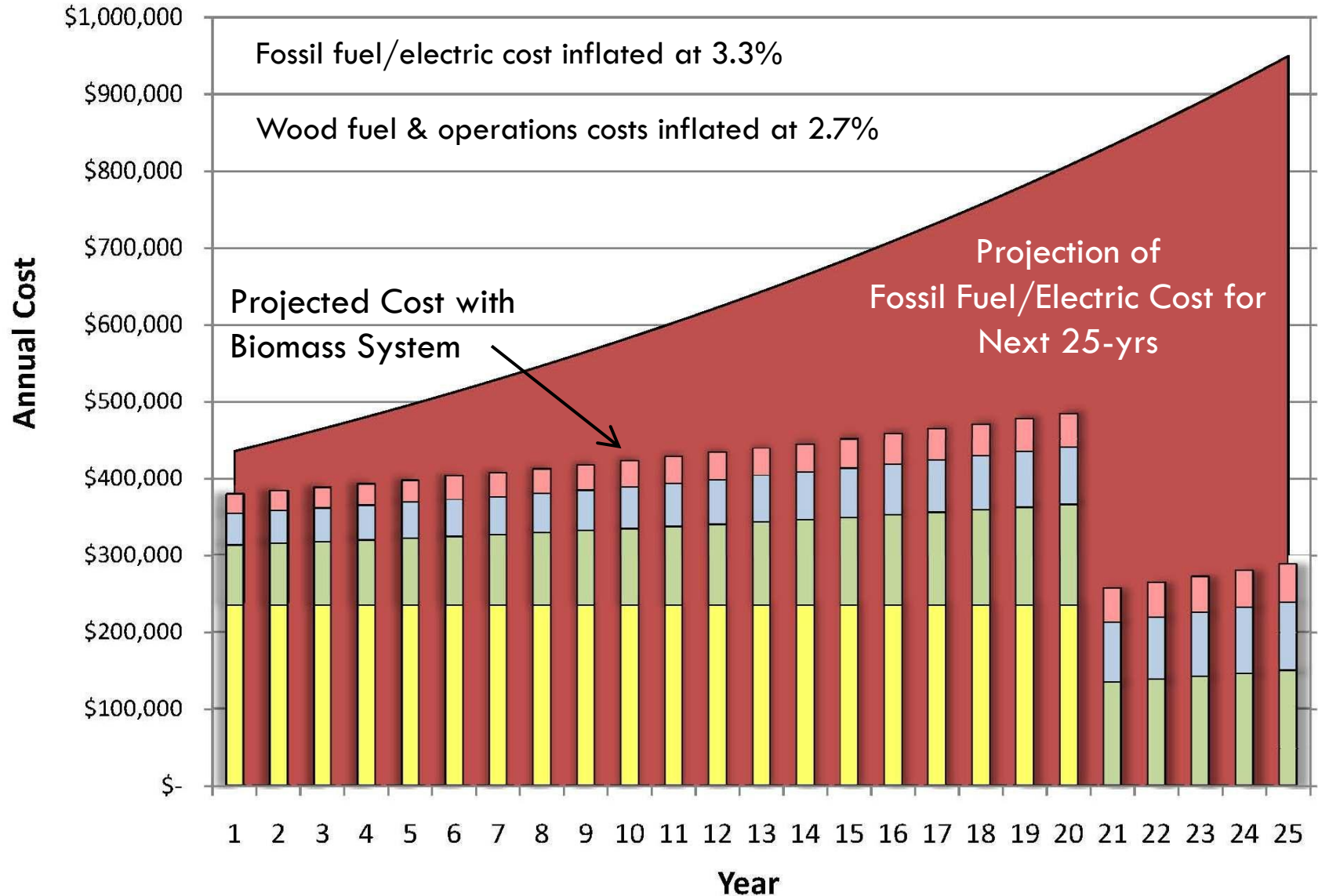
- Rockingham County Complex
  - Location: Brentwood, New Hampshire
  - 226 Bed Nursing Home
  
- Weeks Medical Center
  - Location: Lancaster, New Hampshire
  - 25 Bed Critical Care Facility
  
- North Country Hospital
  - Location: Newport, Vermont
  - 25 Bed Critical Care Facility
  
- Elk Regional Health Center
  - Location: St Mary's, Pennsylvania
  - 218 Bed General Medical and Surgical Hospital



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# Project Provides Positive Cash Flow in 1<sup>st</sup> Year

■ Fossil Fuel/Electric Cost   ■ Financing Payment   ■ Wood Chip Cost   ■ 10% Fuel Oil Cost   ■ Wood Operation Cost



# Grants Received

- North Country RC&D Grant
  - \$75,000 awarded
- US Forest Service – Forest Products Laboratory
  - \$250,000 awarded
- NH Public Utilities Commission – Commercial & Industrial Thermal or Electric Renewable Energy Project Grant
  - \$300,000 awarded



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# Financing Strategy

- ❑ \$3.2 million line of credit open through December 31, 2013 (Interest rate = .98%)
- ❑ USDA Community Facilities Loan obligated at 3.375% for permanent financing
- ❑ Preparing bid documents for offering financing to private lending institutions



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